



## **DISCLOSURE: PATENT PROPOSAL**

### **WAVE-FRONT COLOR MODULE**

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#### **Proposal**

Exposure to light is taken for granted in all aspects of human function. Studies by John Ott and others have demonstrated that all living things are sensitive to different wavelengths of light. Optimum function and performance, as well as growth and hormonal cycles, are dramatically affected by altering wavelengths of light. By altering wavelengths of light, the human perception is that color changes both in saturation and hue.

A method of providing wave-front color therapy has been developed by using a computer or portable handheld devices such as PDA's and other portable telecommunication devices to deliver a specific nanometer wavelength of light to affect a wide variety of visual, binocular, function, perceptual, and cognitive related vision imbalances that interfere with function and performance. The current proposed device would provide specific treatment for these difficulties by delivering wavelengths of light through a computer monitor. An exact therapeutic prescription including nanometer specifications and hue-saturation will be prescribed for individuals with a wide range of visual problems caused by a traumatic brain injury, cerebrovascular accident, and Multiple Sclerosis, and the like, to name a few examples. This disclosure claims analog and digital relations of light as it relates to both the spatial and temporal relationship of light.

#### **Abstract**

The process of adaptation of computer generated and assisted programs geared toward the diagnosis, rehabilitation and adaptive assistance to the neurologically impaired as an aid in cognitive rehabilitation and learning disability adaptive technology. The same basic technology base claimed herein can be used to service at a minimum, five primary groups, that being, the Neurological impaired, the learning disabled, specifically ADD or ADHD, the vision impaired, those who would benefit from color and or light therapy for various issues or ailments, and those seeking faster reading speeds. What these conditions and their treatment methods all share in common is the ability to improve them via a handheld or portable communications device in tandem with the wavelength color therapy program invention that is claimed herein. Each current methodology, as well as future advancements in treatment, can be expanded upon and improved with by this composite invention process as claimed herein. A particular advantage of the claim is the ability to provide treatment for visually impaired individuals on a portable basis. Another advantage of the claim is the ability to display 256,000,000 colors of the color spectrum in any variation, saturation, or hue in any desired combination.

## **Claims**

What is claimed is:

- 1) A computer program that displays specific nanometers of a wavelength of color for light therapy related treatments for display on a variety of mediums as outlined herein, used as a diagnostic mechanism as well as a therapeutic tool, which manipulates displayed colors via programmatic wavelength changes.
- 2) Said computer program's ability to pinpoint therapeutic color wavelengths via digital display and with finite accuracy.
- 3) The ability to display 256,000,000 colors of the color spectrum in any variation, saturation, or hue in any desired combination in a dynamic digital fashion.
- 4) The display of said program via computer display, CRT, LCD, PDA, or any other digital display.
- 5) The distribution of said program via all current and future digital, Internet, telecommunication, and physical means, including but not limited to: CD-ROM, DVD-ROM, VHS, and other such physical means of data distribution.
- 6) A rehabilitative suite of software based on these claims specifically designed for a portable medium such as a computer, pda, or other wired or wireless telecommunications device, to both assist in the diagnosis and then speed the recovery process from a neurological injury or disease, learning disability, or other illness, disability, impairment, or injury that could be treated with light therapy.
- 7) The adaptation of current rehabilitative software for handheld, telecommunication, Internet software download, Personal Digital Assistant (PDA), Televised/closed circuit distribution, Computer hardware, or any other wire or wireless communication or processing device with the specific intent of using such devices in a rehabilitative and diagnostic context using claimed program #1 as a foundation application.
- 8) Analog and digital relations of light as it relates to both the spatial and temporal relationship of light.

The combination of one or more of these claims allows for:

- 1) A method of diagnosis of optimal color wavelengths for devising an exact therapeutic prescription including nanometer specifications and hue-saturation to prescribe for individuals with a wide range of visual problems, including but not limited to learning disabilities and neurological problems.
- 2) A computer implemented method for assisting a user in cognitive and vision rehabilitation, as well as the rehabilitation and assistance of learning disabilities via a handheld device to assist the visually impaired, learning impaired, as well as those in need of cognitive rehabilitation due to brain injury, stroke, CVA or other neurological injury or disease.
- 3) Adaptions of current rehabilitation software as outlined in other patents by the same inventors (Dara Medes, Heather Medes, William Padula) to be downloaded onto a handheld device.

- 4) A website to make said software suite available for download onto a handheld device.
- 5) A CD, DVD and any such other recordable medium devices to hold such software for distribution.
- 6) The software processes of converting rehabilitation software from dumb-terminal non-portable systems to software that is portable via any handheld or telecommunication device.
- 7) Neurological Treatment methods in or outside of traditional rehabilitation setting by using said software suite to do rehabilitation in a setting and schedule most convenient to the patient.
- 8) Treatments traditionally associated with light therapy including but not limited to vision therapy, sleep disturbance, headaches, asthma, depression, weight problems, adrenal and hormonal imbalances, dermatological enhancement, cosmetic enhancement, amongst others, can be available in a portable form not requiring constant office supervision.
- 9) Treatment services traditionally restricted to directly out of a doctor's office may now be monitored via wire or wireless telecommunication or processing devices, including any other form of transmission technology, or in a doctor's or therapist's office setting. This allows for treating the house bound or those geographically far away in or out of a traditional office treatment setting.

### **Description**

#### **FIELD OF THE INVENTION**

The invention relates to human/computer interfaces on portable devices such as pda's and other similar telecommunication systems, to make portable software systems intended for rehabilitation. Implicit is the use of desktop computers and other modes of delivery as described in the above claims, specifically claims 4 - 7.

#### **DESCRIPTION OF PRIOR ART**

Prior art is divided into three primary categories, diagnostic tools, rehabilitation treatment methods, and previously designed light therapy treatment methods.

The first area of prior art is the manner of diagnostic tools used in the development of wave-front color therapy in conjunction with therapeutic prescriptions. To date, color therapy in conjunction with therapeutic prescription use has been a manual, often tedious process not capable of pinpointing the precise nanometer of a color's wavelength best suited for the patient's use.

The second area of prior art is the manner of rehabilitation treatment methods for neurological impairments such as stroke, brain injury, CVA, and MS to name several, and learning disabilities such as Attention Deficit Disorder, and ADHD.

There is a host of computer based; non-portable, dumb-terminal rehabilitation systems used within the structure of cognitive, vision and learning disability rehabilitations. They are geared at re-training the impaired or injured neurological processes.

Unfortunately, there are two basic shortcomings to the conventional approach of neurological rehabilitations. These machines are only available to the rehabilitation facility due to cost and size and are therefore not available for private patient consumer use. This limits the amount of time a patient can spend using these rehabilitation tools due to a number of factors.

First, a patient who is a candidate for neurological rehabilitation is often also attending physical and occupational therapies, recovering from surgeries or other treatments and procedures associated with their neurological assault. During the time crucial window of cognitive and visual rehabilitation, a patient's day is consumed with therapies and doctors visits, often leaving the time that can be spent on cognitive rehabilitation shortchanged or even completely neglected.

Second, the neurologically impaired patient's rehabilitation is also subject to the schedules of their caretakers as they are often unable to transport themselves, inclement weather, flare-up of injuries, or office scheduling conflicts.

Despite the enormous amount of time devoted to the rehabilitation process involving doctors and rehabilitation specialists, a patient spends a great deal of time waiting in medical waiting rooms, waiting for transportation between appointments, and at the end of the day, is often too exhausted to attend to cognitive rehabilitation and the associated exercises. This time can be recaptured with a portable rehabilitation device to make best use of spare time to become rehabilitation time.

A patient who does not face the aforementioned problems can also use this device to maximize their rehabilitation, reducing rehabilitation expense while making best use of the window of maximum rehabilitative progress.

A portable handheld rehabilitation system can assist in limiting the burden and expense of caretakers by allowing more rehabilitation to happen at home.

The second fundamental problem in the conventional approach is that it does not fully take into account the need of the learning impaired student.

A learning impaired student is paired with a learning specialist during school hours, which either robs time from their education or uses their break periods, leaving an already overworked student without a break during the day. The second approach is to

team a student with a learning specialist after school, taking time away from homework and putting a student further behind in their work.

Any adaptive technology devices that a mainstreamed student may be offered might not be available in all schools, and a student may often be embarrassed to use them in front of others students who may perceive a learning disability as a lack of intelligence on the part of the disabled student. Fear of such a perception may render a student reluctant or too embarrassed to use the adaptive tech tools designed to help them.

This problem is eliminated with the use of a handheld device such as a pda or telecommunications device that is common enough to own that a student would not be thought of as irregular to use the program during most classroom activities. This allows the ADD, ADHD, low vision, or learning-disabled student a greater ability to mainstream into a standard classroom setting.

The third area of previous art is in conjunction with the use of light therapy.

Color Therapy has long been used medically. Color, or Light Therapy is used for a number of purposes, including, Seasonal Affected Disorder (SAD), dermatological purposes, cosmetic enhancement, as well as for Syntonic Optometry. The latter has been used for the past 70 years for treatment of several optometric disorders. Recently, it has been shown to be helpful in the diagnosis and treatment of brain injuries, Cerebro-vascular accidents (CVA), and other neurological disorders.

There are, however, several failings of the treatments and therapies developed to date:

1) White light machines.

Many light machines emit full spectrum white light, not specific and finite wavelengths. There are multiple benefits to being able to isolate a finite wavelength, as in the case of this claimed computer program:

- a. The White-Light machines available today, by their very nature, emit all wavelengths in the visible spectrum. For as therapeutic as certain wavelengths of color can be to a patient, another wavelength could be harmful or uncomfortable, and there is no way to omit the uncomfortable or harmful wavelengths from a white-light machine and only use the helpful ones for therapy.
- b. Many patients who suffer neurological problems suffer from photophobia, or sensitivity to light and glare. While some white-light machines have a dimmer, this may not reduce brightness and glare enough for the patient and cause discomfort, and would not be therapeutic.
- c. Since all colors are emitted from a white-light machine, it is impossible to determine what wavelengths could be most helpful to the patient. In contrast, this computer program can isolate the exact wavelength of color that is beneficial to the patient.
- d. White-light machines often require extended periods of time per day to receive therapeutic benefit. By this program isolating to the most

therapeutic range of wavelengths, the patient will receive the most precise diagnosis and the best therapy for their specific disorder in the shortest amount of time. This is essential as there is a limited window of time after neurological injury or onset of a neurological illness that a patient has to capture the majority of recovery they will make – thus, time is of the essence.

- 2) Methods of color therapy developed to date that isolate certain color spectrums are generally unable to provide the diagnostic benefits of the computer program claimed herein due to their inability to produce the scope of colors necessary. In addition, they also lack certain elements of the ideal color manipulation therapy. One such example is the use of lasers and radiation of certain colors on the eye, with the obvious side effects associated with lasers and radiation. Other methods of light therapy involve physically dangerous illumination apparatuses such as gas or flame, which are dangerous and prohibit unattended or at home use due to their very nature. None of these factors are an issue with the current claimed invention.

## SUMMARY OF THE INVENTION

A color light therapy computer program has been produced with the capability to display a full range of wave lengths systematically delineated of the visual spectrum. Using said program claimed herein as a foundation application, with various modifications, the preciseness of the wave length production and display thereof allows for a diagnostic process and a host of rehabilitative and treatment applications to be produced from the same fundamental program.

It is therefore an object of the current invention to use current and future computer and telecommunication handheld and mobile devices as a method of transportable rehabilitation, light therapy treatments, and a diagnostic device. The use of a handheld device is especially useful in this regard as these handheld devices have a life use beyond the rehabilitation of the patient, and are often distributed to those with neurological impairments by disability agencies making the procurement of such a device far more cost effective than any other rehabilitation device currently available.

Software that is intended for rehabilitation can be adapted for handheld device use. Such software can be purchased or downloaded to the handheld device via the Internet or from the rehabilitation office. This allows the rehabilitation office to provide consistent rehabilitation when a patient is unable to attend. This would require a software suite available to the office, as well as a website for download of software to the handheld device.

It is still a further advantage of the present invention that it provides a computer display for visually-impaired users that is convenient, lightweight, low-cost, minimally power hungry, and capable of portable operation without degraded performance.

In addition to all handheld or otherwise portable methods stated within, said inventions will be of use on less portable means of display such as laptop computers, desktop computers, televisions, or any other telecommunication or display device deemed as an appropriate or advantageous technology for the intended uses.

The above description is for the purpose of teaching the person of ordinary skill how to practice the present invention, and it is not intended to detail all obvious modifications and variations of it, which will become apparent to the skilled worker upon reading the description. It is intended, however, that all such obvious modifications and variations be included within the scope of the present invention, which is defined by the foregoing claims. The claims are intended to cover the claimed components and steps in any sequence, which is effective to meet the objectives there intended, unless the context specifically indicates the contrary.

In conclusion, the combination of these claimed inventions allows for a cohesive rehabilitative process with diagnostic benefits to a host of conditions.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a conceptual model illustrating the visible color spectrum. Combinations include the entire circuit of the visible color spectrum or the display of any one color to any other color in any direction as indicated by arrows. The entire visible spectrum represented within this computer program is 256,000,000 colors.

Figure 2 is a flowchart of the methodology of the base digital/computer program.